

halftone background, and the white regions indicate text on solid background. The segmentation map is directly embedded in the original image, without encoding. The three segmentation classes are represented by the 45°, 90° and 135° 2X2 polarized patterns shown in parts (d)-(f) of Fig. 13, respectively.

[0092] Fig. 17 is a flowchart outlining one exemplary embodiment of a method of retrieving watermarks embedded by the various exemplary embodiments of the systems and methods according to this invention. Beginning in step S400, operation continues to step S405, where the watermarked image data is input. Next, in step S410, a 2x2 pixel pattern is chosen from the watermarked image data. Next, in step S415, a determination is made whether the 2x2 pixel pattern is all white or all black. If the 2x2 pixel pattern is all white or all black, operation goes to step 455. Otherwise, operation goes to step S420.

[0097] It should be appreciated that which values for the next two bits of the watermark chosen to correspond to the 2x2 binary pattern of the binary watermarked image data is not limited to those shown in Fig. 17. For example, if the 2x2 binary pattern has a 90° polarized angle, the values of the next two bits of the watermark data can be determined to be 11.

#### REMARKS

Claims 1-16 are pending. By this Amendment, the specification is amended to delete any reference to Figs. 17-20, which were omitted from the application as filed. A new Fig. 17, which corresponds to the Fig. 20 that should have been filed with the application, is added to the application. The subject matter of new Fig. 17 is fully supported at page 16, line 18-page 17, line 18 of the specification.